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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/713,400	11/15/2000	Daisuke Arai	WATA:009	3120

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EXAMINER

LITOVCHENKO, VLADIMIR

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 04/01/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/713,400

Applicant(s)

ARAI ET AL.

Examiner

Vladimir Litovchenko

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claims 1-34 are rejected** under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. **With respect to claims 1-34**, the applicants disclose some properties of the individual components (transparency, refraction index, thickness, material), but fail to disclose any property of the article, except for how the article is composed from these individual components.

5. **With respect to claims 1,3,8,15,24**, the applicants disclose reflectance "in a visible light region". Since reflectance depends upon wavelength, such disclosure is indefinite.

6. **With respect to claim 1**, the applicants claim a transparent films each having reflectance in a range 5- 95%. This is a contradiction: a film cannot be called transparent if it has a high level of reflectance.

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7. **With respect to claims 1-34**, the applicants claim to control reflectance of the individual ("transparent") film by choosing its thickness. This is wrong: reflectance of an individual film first of all controlled by the state of the first surface; if the reflection from the second surface is substantial, only then the thickness becomes important.

Claim Rejections - 35 USC § 102

8. **Claims 1, 3-34 are** rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over McCurdy et al, US Patent 5,935,716.

9. **With respect to claim 1**, McCurdy et al disclose a multi-layer anti-reflective glass article including a glass substrate, a first coating is applied over the substrate, refractive index of the first coating ranges from 1.8 to 2.6; a second coating is applied over the first coating, its refractive index is from about 1.45 to about 1.6. See Abstract. See also col.1, lines 10-20, 53-60; col.3, lines 3-29. They also disclose that the glass article exhibit a reflectance of less than 6% and a visible light transmittance of greater than 90%. See claim 22. See also col.2, lines 20-30.

McCurdy et al also disclose a large variety of materials used as low/high refraction pairs: tin oxide, titanium oxide, tantalum oxide and others. See col.3, lines 3-29. They also disclose a large range of film thickness. See col.3, lines 15-40, 50-58, claims 17-19.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over McCurdy et al, US Patent 5,935,716 in view of Liu et al, US Patent, 6,208, 466.

With respect to claim 2, McCurdy et al disclose a multi-layer anti-reflective glass article including a glass substrate, a first coating is applied over the substrate, refractive index of the first coating ranges from 1.8 to 2.6; a second coating is applied over the first coating, its refractive index is from about 1.45 to about 1.6. See Abstract. See also col.1, lines 10-20, 53-60; col.3, lines 3-29. They also disclose that the glass article exhibit a reflectance of less than 6% and a visible light transmittance of greater than 90%. See claim 22. See also col.2, lines 20-30.

They fail to disclose a transparent roughened surface scattering layer stacked on the transparent substrate.

However, Liu et al disclose a scattering layer between a transparent substrate and a multi-layer stack of low/high refraction coating pairs.

Therefore, it would have been obvious to one skilled in the art at the time when the invention was made to introduce a scattering layer in the device of McCurdy et al to couple mere light into and out the multiplayer stack. See col.8, line 60 – col.9, line 29; col3, lines 20-65.

11. **Claims 1, 3-34 rejected** under 35 U.S.C. 103(a) as being unpatentable over Demiryont et al, US Patent 5,245,468.

12. **With respect to claims 1,3-34**, Demiryont et al disclose an anti-reflective coating of high refractive index material and a low refractive index material as a film pair being substantially transparent to a visible light.

They further disclose anti-reflection coating system comprising a film stack of pairs of high refractive index material and low refractive index material; system using such substantially transparent stacks having transmittance value of at least about 70%, up to 90% and less than about 8% of reflectance of visible light, they also disclose a large range of thickness of films, from about 400-600 nm to 1000-1500 nm.

13. With respect to claims 1,33,34. Demiryont et al disclose: "Numerous anti-reflective coatings are known, many of which comprise a film stack in which a first film of relatively high refractive index material is paired with a second film of lower refractive index material. Exemplary material ... silicon dioxide paired with paired with an aluminum oxide or titanium dioxide...other materials such as zirconium oxide, tantalum oxide and magnesium oxide are also mentioned. See col.1, lines 33-65.

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Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vladimir Litovchenko whose telephone number is (703) 308-0851. The examiner can normally be reached on 8:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William L Sikes can be reached on (703) 308-4842. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7721 for regular communications and (703) 308-7721 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

VL

March 22, 2002



**KENNETH PARKER
PRIMARY EXAMINER**